

WHAT IS CLAIMED IS:

1. A system of remotely detecting an electric arc event, said system comprising:

at least one slave controller disposed proximate at least one load and
5 electrically connected to the at least one load via at least one conductor, wherein the at least one slave controller comprises:

at least one solid-state switch capable of controllably altering the input current to the at least one load; and

10 at least one measuring element for measuring at least one parameter associated with the at least one load and the at least one solid-state switch, wherein said solid-state switch controllably alters the input current to the at least one load according to the at least one parameter; and

at least one arc fault detector electrically connected to the at least one conductor between the at least one slave controller and the at least one load, wherein
15 the at least one arc fault detector is capable of detecting an electric arc event.

2. A system according to Claim 1, wherein each arc fault detector is capable of notifying a respective slave controller when the respective arc fault detector detects an electric arc event such that the at least one solid-state switch of the
20 respective slave controller can alter the input current to the at least one load.

3. A system according to Claim 1, wherein the at least one solid-state switch operates in at least one mode selected from a group consisting of an on mode wherein the at least one solid-state switch permits a respective load to receive the
25 input current, and an off mode wherein the at least one solid-state switch prevents the respective load from receiving the input current, and wherein the at least one solid-state switch is capable of operating in the on mode such that when the at least one arc fault detector detects an electric arc event the at least one solid-state switch is capable of being placed in the off mode.

30

4. A system according to Claim 1, wherein each arc fault detector is capable of detecting an electric arc event by detecting at least one of white noise and chaotic behavior in current through the at least one conductor to the at least one load.

5. A system according to Claim 4, wherein each arc fault detector is capable of detecting white noise by detecting a spectrally dense current through the at least one conductor to the at least one load.

5 6. A method of remotely detecting an electric arc event comprising:
configuring a processing element that controls input current through at least one switch to at least one load via at least one conductor, wherein the configuring is based upon at least one characteristic selected from a group consisting of a current rating of each load, a voltage rating of each load, a maximum current rating of each
10 switch and a temperature rating of each switch;
operating each switch in an on mode wherein each switch permits the input current from flowing to a respective load, and thereafter controlling the input current to the at least one load, wherein controlling the input current comprises:
monitoring at least one parameter associated with each switch and
15 respective load selected from a group consisting of the input current to the load, a voltage drop across the load, the input current through the switch and a temperature of the switch;
determining a condition of each switch and respective load depending upon at least one of the at least one characteristic and the at least one
20 parameter; and
operating each switch in at least one mode selected from a group consisting of the on mode and the off mode depending upon the condition of the respective loads,
wherein controlling the input current further comprises monitoring the input
25 current for an electric arc event, and thereafter operating each switch in the off mode when an electric arc event is detected.

7. A method according to Claim 6, wherein monitoring the input current for an electric arc event comprises monitoring the input current for at least one of
30 white noise and chaotic behavior in the input current.

8. A system according to Claim 7, wherein monitoring the input current for white noise comprises monitoring the input current for spectrally dense current.

9. A system of remotely detecting an electric arc event, said system comprising:

at least one load;

at least one slave controller disposed proximate, and electrically connected to,
5 the at least one load, wherein the at least one slave controller is capable of measuring
at least one parameter associated with the at least one load, and wherein the at least
one slave controller is capable of controllably altering the input current to the at least
one load, according to the at least one parameter; and

at least one arc fault detector electrically connected between the at least one
10 slave controller and the at least one load, wherein the at least one arc fault detector is
capable of detecting an electric arc event.

10. A system according to Claim 9, wherein each arc fault detector is
capable of notifying a respective slave controller when the respective arc fault
15 detector detects an electric arc event such that the respective slave controller can alter
the input current to the at least one load.

11. A system according to Claim 9, wherein the at least one slave
controller operates in at least one mode selected from a group consisting of an on
20 mode wherein the at least one slave controller permits a respective load to receive the
input current, and an off mode wherein the at least one slave controller prevents the
respective load from receiving the input current, and wherein the at least one slave
controller is capable of operating in the on mode such that when the at least one arc
fault detector detects an electric arc event the at least one slave controller is capable of
25 being placed in the off mode.

12. A system according to Claim 9, wherein each arc fault detector is
capable of detecting an electric arc event by detecting at least one of white noise and
chaotic behavior in current through the at least one conductor to the at least one load.
30

13. A system according to Claim 12, wherein each arc fault detector is
capable of detecting white noise by detecting a spectrally dense current through the at
least one conductor to the at least one load.